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CLAIM ~~22~~ A device for use in restoring electrical balance to transmission lines connected thereto, comprising:

a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

at least one capacitive element integrally defined within said circuit board and connected to said circuitry, said at least one capacitive element comprising a plurality of plated through holes, said plated through holes being spaced and diagonally interconnected to obtain a desired capacitance for restoring electrical balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

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CLAIM ~~23~~ An electrically balanced modular jack device comprising:

a circuit board having circuitry including a plurality of conductive through holes, said conductive through holes being arranged and diagonally interconnected to define at least one capacitance;

jack means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said at least one capacitance; and

termination block means disposed on said circuit board and connected by said circuitry to said jack means and to at least one of said conductive through holes defining said at least one capacitance;

wherein said capacitance restores electrical balance between said jack means and said terminal block means.

³ ²
CLAIM ~~24~~ The device of claim ~~23~~ wherein said circuit board includes:

a first surface having said jack means disposed thereon; and

a second surface opposed to said first surface, said second surface having said termination block means disposed thereon.

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CLAIM ~~25~~. The device of claim ²~~23~~ wherein said termination block means comprises:

a housing having first and second spaced apart sidewalls and an upper surface having a plurality of openings therethrough;

a plurality of spaced apart insulation penetrating beam contacts disposed in said openings of said housing, said beam contacts connected to said circuit board; and

a plurality of spaced apart teeth extending from said upper surface, said teeth defining wire conductor retaining slots.

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CLAIM ~~26~~. An electrically balanced electrical connector comprising:

a circuit board having circuitry including a plurality of conductive through holes, said conductive through holes being arranged and diagonally interconnected to define at least one capacitance;

first connector means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said at least one capacitance; and

second connector means disposed on said circuit board and connected by said circuitry to said first connector means and to at least one of said conducted through holes defining said at least one capacitance;

wherein said capacitance restores electrical balance between said first connector means and said second connector means.

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CLAIM ~~27~~. The electrical connector of claim ⁵~~24~~ wherein said circuit board includes:

a first surface having said first connector means disposed thereon; and

a second surface opposed to said first surface, said second surface having said second connector means disposed thereon.

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CLAIM ²~~28~~. The electrical connector of claim ⁵~~24~~ wherein said first connector means comprises a jack.

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CLAIM ⁸~~29~~. The electrical connection of claim ⁵~~24~~ wherein said second connector means comprises a termination block.

CLAIM ⁹~~30~~. A device for use in restoring reactive balance to transmission lines connected thereto, comprising:

1
a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

2
a reactive element integrally defined within said circuit board and connected to said circuitry, said reactive element comprising a plurality of plated through holes, said plated through holes being spaced and interconnected in a defined configuration to obtain a desired reactance for restoring reactive balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

CLAIM ¹⁰~~31~~. The device of claim ⁹~~30~~ wherein said plated through holes are spaced and diagonally interconnected to obtain said desired reactance for restoring reactive balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

CLAIM ¹¹~~32~~. A reactive balanced modular jack device comprising:

a circuit board having circuitry including a plurality of conductive through holes, said conductive through holes being arranged and interconnected to define a reactance;

jack means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said reactance; and

termination block means disposed on said circuit board and connected by said circuitry to said jack means and to at least one of said conductive through holes defining said reactance;

wherein said reactance restores reactive balance between said jack means and said terminal block means.

CLAIM ¹²~~33~~. The device of claim ¹¹~~32~~ wherein said conductive through holes are diagonally interconnected to define said reactance.

CLAIM ¹³~~34~~. The device of claim ¹¹~~32~~ wherein said circuit board includes:

a first surface having said jack means disposed thereon; and

a second surface opposed to said first surface, said second surface having said termination block means disposed thereon.

CLAIM ¹⁴~~35~~. The device of claim ¹¹~~32~~ wherein said termination block means comprises:

a housing having first and second spaced apart sidewalls and an upper surface having a plurality of openings therethrough;

a plurality of spaced apart insulation penetrating beam contacts disposed in said openings of said housing, said beam contacts connected to said circuit board; and

a plurality of spaced apart teeth extending from said upper surface, said teeth defining wire conductor retaining slots.

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CLAIM ~~36~~ A reactive balanced electrical connector comprising:

a circuit board having circuitry including a plurality of conductive through holes, said conductive through holes being arranged and interconnected to define a reactance;

first connector means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said reactance; and

second connector means disposed on said circuit board and connected by said circuitry to said first connector means and to at least one of said conducted through holes defining said reactance;

wherein said reactance restores reactive balance between said first connector means and said second connector means.

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CLAIM ~~37~~ The electrical connector of claim ~~36~~ ¹⁵ wherein:

said conductive through holes are diagonally interconnected to define said reactance.

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CLAIM ~~38~~ The electrical connector of claim ~~36~~ ¹⁵ wherein said circuit board includes:

a first surface having said first connector means disposed thereon; and

a second surface opposed to said first surface, said second surface having said second connector means disposed thereon.

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CLAIM ~~39~~ The electrical connector of claim ~~36~~ ¹⁵ wherein said first connector means comprises a jack.

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CLAIM ~~40~~ The electrical connection of claim ~~36~~ ¹⁵ wherein said second connector means comprises a termination block.

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CLAIM ~~41~~. A device for use in restoring electrical balance to transmission lines connected thereto, comprising:

a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

at least one capacitive element integrally defined within said circuit board and connected to said circuitry, said at least one capacitive element comprising an array of aligned plated through holes interconnected to obtain a desired capacitance for restoring electrical balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

²¹
CLAIM ~~42~~. The device of claim ²⁰~~41~~ wherein said array of aligned plated through holes comprises aligned columns and rows of plated through holes.

²²
CLAIM ~~43~~. The device of claim ²⁰~~41~~ wherein said array of aligned plated through holes are diagonally interconnected.

²³
CLAIM ~~44~~. An electrically balanced modular jack device comprising:

a circuit board having circuitry including an array of conducted through holes interconnected to define at least one capacitance;

jack means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said at least one capacitance; and

termination block means disposed on said circuit board and connected by said circuitry to said jack means and to at least one of said conductive through holes defining said at least one capacitance;

wherein said capacitance restores electrical balance between said jack means and said terminal block means.

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CLAIM ~~45~~. The device of claim ~~44~~²³ wherein said array of aligned conductive through holes comprises aligned columns and rows of conductive through holes.

²⁵
CLAIM ~~46~~. The device of claim ~~44~~²³ wherein said array of aligned conductive through holes are diagonally interconnected.

²⁶
CLAIM ~~47~~. The device of claim ~~44~~²³ wherein said circuit board includes:
a first surface having said jack means disposed thereon; and
a second surface opposed to said first surface, said second surface having said termination block means disposed thereon.

²⁷
CLAIM ~~48~~. The device of claim ~~44~~²³ wherein said termination block means comprises:
a housing having first and second spaced apart sidewalls and an upper surface having a plurality of openings therethrough;
a plurality of spaced apart insulation penetrating beam contacts disposed in said openings of said housing, said beam contacts connected to said circuit board; and
a plurality of spaced apart teeth extending from said upper surface, said teeth defining wire conductor retaining slots.

CLAIM ~~49~~²⁸. An electrically balanced electrical connector comprising:

a circuit board having circuitry including an array of conductive through holes interconnected to define at least one capacitance;

first connector means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes defining said at least one capacitance; and

second connector means disposed on said circuit board and connected by said circuitry to said first connector means and to at least one of said conducted through holes defining said at least one capacitance;

wherein said capacitance restores electrical balance between said first connector means and said second connector means.

CLAIM ~~50~~²⁹. The device of claim ~~49~~²⁸ wherein said array of aligned conductive through holes comprises aligned columns and rows of conductive through holes.

CLAIM ~~51~~³⁰. The device of claim ~~49~~²⁸ wherein said array of aligned conductive through holes are diagonally interconnected.

CLAIM ~~52~~³¹. The electrical connector of claim ~~49~~²⁸ wherein said circuit board includes:
a first surface having said first connector means disposed thereon; and
a second surface opposed to said first surface, said second surface having said second connector means disposed thereon.

CLAIM ~~53~~³². The electrical connector of claim ~~49~~²⁸ wherein said first connector means comprises a jack.

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CLAIM ~~54~~. The electrical connection of claim ~~49~~³⁸ wherein said second connector means comprises a termination block.

³⁴
CLAIM ~~55~~. A device for use in restoring electrical balance to transmission lines connected thereto, comprising:

a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

a plurality of plated through holes in said circuit board, said plated through holes being spaced and interconnected in a defined configuration for restoring electrical balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

³⁵
CLAIM ~~56~~. An electrically balanced modular jack device comprising:
a circuit board having circuitry including a plurality of conductive through holes;
jack means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes; and

termination block means disposed on said circuit board and connected by said circuitry to said jack means and to at least one of said conductive through holes;

wherein said conductive through holes are arranged and interconnected to restore electrical balance between said jack means and said terminal block means.

³⁶ ³⁵
CLAIM ~~57~~. The device of claim ~~56~~ wherein said circuit board includes:

a first surface having said jack means disposed thereon; and

a second surface opposed to said first surface; said second surface having said termination block means disposed thereon.

CLAIM ³⁷~~58~~. The device of claim ³⁵~~56~~ wherein said termination block means comprises:

a housing having first and second spaced apart sidewalls and an upper surface having a plurality of openings therethrough;

a plurality of spaced apart insulation penetrating beam contacts disposed in said openings of said housing, said beam contacts connected to said circuit board; and

a plurality of spaced apart teeth extending from said upper surface, said teeth defining wire conductor retaining slots.

CLAIM ³⁸~~59~~. An electrically balanced electrical connector comprising:

a circuit board having circuitry including a plurality of conductive through holes;

first connector means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes; and

second connector means disposed on said circuit board and connected by said circuitry to said first connector means and to at least one of said conducted through holes;

wherein said conductive through holes are arranged and interconnected to restore electrical balance between said first connector means and said second connector means.

CLAIM ³⁹~~60~~. The electrical connector of claim ³⁸~~59~~ wherein said circuit board includes:

a first surface having said first connector means disposed thereon; and

a second surface opposed to said first surface, said second surface having said second connector means disposed thereon.

CLAIM ⁴⁰~~61~~. The electrical connector of claim ³⁸~~59~~ wherein said first connector means comprises a jack.

CLAIM ⁴¹~~62~~. The electrical connection of claim ³⁸~~59~~ wherein said second connector means comprises a termination block.

⁴²
CLAIM ~~63~~. A device for use in restoring reactive balance to transmission lines connected thereto, comprising:

a circuit board having circuitry thereon, said circuitry comprising a plurality of pads and circuit traces; and

a plurality of plated through holes in said circuit board; said plated through holes being spaced and interconnected in a defined configuration for restoring reactive balance to the transmission lines wherein crosstalk between the transmission lines is reduced.

⁴³
CLAIM ~~64~~. A reactively balanced modular jack device comprising:

a circuit board having circuitry including a plurality of conductive through holes; jack means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes; and

termination block means disposed on said circuit board and connected by said circuitry to said jack means and to at least one of said conductive through holes;

wherein said conductive through holes are arranged and interconnected to restore reactive balance between said jack means and said terminal block means.

⁴⁴ ⁴³
CLAIM ~~65~~. The device of claim ~~64~~ wherein said circuit board includes:

a first surface having said jack means disposed thereon; and

a second surface opposed to said first surface, said second surface having said termination block means disposed thereon.

⁴⁵
CLAIM ~~66~~. The device of claim ~~64~~⁴³ wherein said termination block means comprises:

a housing having first and second spaced apart sidewalls and an upper surface having a plurality of openings therethrough;

a plurality of spaced apart insulation penetrating beam contacts disposed in said openings of said housing, said beam contacts connected to said circuit board; and

a plurality of spaced apart teeth extending from said upper surface, said teeth defining wire conductor retaining slots.

⁴⁶
CLAIM ~~67~~. A reactively balanced electrical connector comprising:

a circuit board having circuitry including a plurality of conductive through holes;
first connector means disposed on said circuit board and connected by said circuitry to at least one of said conductive through holes; and

second connector means disposed on said circuit board and connected by said circuitry to said first connector means and to at least one of said conducted through holes;

wherein said conductive through holes are arranged and interconnected to restore reactive balance between said first connector means and said second connector means.

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CLAIM ~~68~~. The electrical connector of claim ~~67~~⁴⁶ wherein said circuit board includes:

a first surface having said first connector means disposed thereon; and

a second surface opposed to said first surface, said second surface having said second connector means disposed thereon.

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CLAIM ~~69~~. The electrical connector of claim ~~67~~⁴⁶ wherein said first connector means comprises a jack.

⁴⁹
CLAIM ~~70~~. The electrical connection of claim ~~67~~⁴⁶ wherein said second connector means comprises a termination block.